

# SUSCEPTIBILITY TO DEFORMABILITY ASSESSMENT OF NEW HIGH-STRENGTH CuMg ALLOYS CHARACTERIZED WITH HIGH WT. % OF Mg

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**Abstract** - An increasing demand for electricity conducting materials caused by growing demand for electrical energy made it necessary to improve existing materials and develop a new type of alloys such as CuMg alloys with high wt. % of magnesium, thus, making the materials both of highly increased mechanical properties and reasonable electrical conductivity. The obtaining of such alloys using metallurgical synthesis have been proved to be possible in several scientific publications, however, processing of the obtained ingots or cast rods is still to be questioned. The proposed paper is dedicated to the susceptibility to deformability during cold working of CuMg alloys with Mg content ranging between 2 and 4 wt. %. The conducted uniaxial compression tests determined at what Mg content and with what amount of deformations fractures occurred. The materials were analyzed in four various states, i.e. as-cast state, after homogenization and super saturation, after drawing process in a single draw with  $\lambda=1.2$  and after drawing and recrystallization. The obtained results made it possible to analyze basic properties such as hardness and electrical conductivity and their evolution as the material changed due to the tests it was subjected to. The analysis of the results made it possible to determine the possibility of fracture occurrence during the deformation process and the prospective final properties of the designed material.

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